International Conference on Engineering, Applied Science And Technology

SERVICE QUALITY IMPROVEMENT IN A PLASTIC PELLET CUTTING TOOL MANUFACTURING COMPANY USING THE SERVQUAL, IPA, AND QFD METHODS

Ades Yulia Apriani[1]*, Saiful Hendra[2], Hasbullah[3], Mirandhi Pratiwi[4], Singgih Juniawan[5], Daruki[6]

[1,2,3,4,5,6] *Mercu Buana University, Jl. Meruya Selatan No.1, Jakarta and 11650, Indonesia*

ARTICLE INFO

Keywords:
Manufacturing
ServQual
IPA
QFD
Quality

ABSTRACT

A manufacturing company that produces plastic seed-cutting tools received complaints accounting for 65% of the total shipments made over a year. This study aims to improve and mitigate corrective actions that can enhance the company's service quality. The methods used in this research include the Servqual method, followed by determining improvement variables using the IPA (Importance-Performance Analysis) method and seeking improvement solutions using the QFD (Quality Function Deployment) method. The results show nineteen indicators of the gap between Perception and Expectation, with a negative range from -2.0777 to 0.0485, indicating the need for improvement. The IPA analysis identified four key indicators as priorities for enhancement. In contrast, the QFD analysis, processed into a HOQ (House of Quality) matrix, identified four key areas that need improvement, namely: QC training with a score of 6 (13.64%), IT personnel recruitment with a score of 9 (20.45%), recalculating production costs (HPP) with a score of 10 (22.73%), and production process optimization with a score of 19 (43.18%).

Introduction

Service quality is a critical element in a company's competitiveness in the manufacturing sector, particularly in meeting customers' evolving needs. In the plastic pellet-cutting tool manufacturing industry, rising customer expectations for faster delivery, superior product quality, and cost efficiency drive companies to adopt systematic approaches to improving services. The SERVQUAL, IPA, and QFD methods provide an integrated framework for identifying and addressing service gaps that may impact customer satisfaction. The SERVQUAL method enables the measurement of satisfaction levels by identifying gaps between customer perceptions and expectations across five service dimensions: tangibles, reliability, responsiveness, assurance, and empathy [1].

Importance-Performance Analysis (IPA) helps prioritize service attributes that need improvement

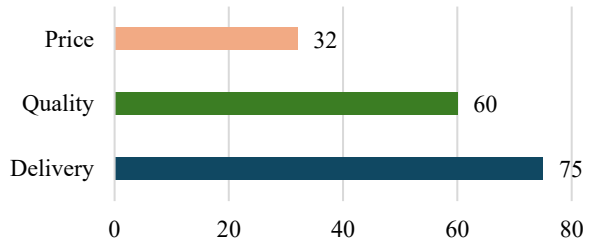


Figure 1. Details of Company Complaints for the Period July 2023 - June 2024

based on their importance to customers [2]. Meanwhile, Quality Function Deployment (QFD)

* Corresponding author.
E-mail address: adesjulia12@gmail.com

translates customer needs into technical specifications for strategic service enhancements [3]. Previous studies have demonstrated that this integrated approach improves service quality across various sectors. For instance, SERVQUAL, IPA, and QFD integration has been applied to identify critical service attributes in the online transportation sector with significant gaps, providing relevant technical solutions [4]. Additionally, in the cement manufacturing sector, customer coordination and timely completion of tasks were prioritized to enhance internal customer satisfaction [5].

Based on the data released by the company from July 2023 to June 2024, it is known that complaints received account for 65% of the total shipments made. Of these complaints, 32 customers reported issues related to pricing, 60 customers reported quality issues not meeting the expected specifications, and 75 customers reported delivery issues not aligning with the agreed schedule (Figure. 1).

In the case of a plastic pellet-cutting tool manufacturing company, initial data collected and presented in Figure 1 indicates that delivery aspects have the highest priority score compared to price and quality, highlighting an urgent need to improve the efficiency and reliability of the distribution system. Applying SERVQUAL, IPA, and QFD methods will assist the company in understanding customer needs, prioritizing areas for improvement, and designing solutions aligned with customer expectations. This approach has been proven to significantly enhance customer satisfaction and strengthen the company's competitiveness in the market [6]. Thus, this study aims to identify service quality gaps, prioritize critical attributes, and design strategic improvements to support the company in delivering high-quality services to its customers.

Methods

The SERVQUAL method is an approach to assess service quality by comparing customer expectations with their actual experiences [7]. This method evaluates five key dimensions: reliability (the ability to deliver services consistently and accurately), responsiveness (staff's readiness and willingness to assist customers), assurance (staff's ability to provide trust and security), empathy (attention and care for individual needs), and tangibility (the physical condition of facilities, equipment, and staff). The evaluation is conducted using a standardized questionnaire [8].

The IPA (Importance-Performance Analysis) method is a strategic analysis tool used to evaluate how well certain attributes meet customer expectations by measuring their importance and actual performance [9]. This technique helps organizations identify improvement priorities, allocate resources effectively, and devise strategies to enhance competitiveness. The results are typically presented in a four-quadrant matrix, mapping attributes based on their importance and performance levels, thus simplifying decision-making for addressing weaknesses or sustaining key strengths [10].

QFD (Quality Function Deployment) assists organizations in identifying, prioritizing, and designing technical solutions that align with customer desires [11][12]. By using QFD, production teams can focus on key factors influencing quality, minimize critical variations that could compromise product quality, and improve customer satisfaction and overall production efficiency [13][14].

Research findings demonstrate that the SERVQUAL approach effectively identifies the most relevant service quality elements to support managerial decisions for continuous quality improvement in sales within the manufacturing sector [15]. Based on these findings, the problem-solving approach for this study involves integrating SERVQUAL with sales quality, employing a gap analysis method that combines SERVQUAL, IPA, and QFD [16].

The data collection in this research includes both primary and secondary data. Primary data was gathered through questionnaires, Focus Group Discussions (FGD), and expert evaluations, while secondary data was obtained by reviewing relevant secondary sources (literature review). The data collection process was conducted sequentially as follows:

1. Review of Secondary Data Sources (Literature Review)

The literature review aimed to acquire the latest data regarding sales improvement results. Therefore, the secondary data sources used were sales service quality reports from the manufacturing companies selected as samples [17].

2. Questionnaire

The questionnaire design in this study utilized the five ServQual dimensions to evaluate sales services in manufacturing companies [18]. This closed-ended questionnaire was designed to measure respondents' perceptions of the importance and performance of each service indicator. Before being widely distributed, the questionnaire was tested for validity and reliability by administering it to 30 respondents. Once validated, the questionnaire was distributed broadly. The ServQual method, Importance-Performance Analysis (IPA), and Quality Function Deployment (QFD) were used to analyze the data and identify areas requiring improvement in sales services to enhance customer satisfaction.

3. Focus Group Discussion (FGD)

FGD is a method of collecting data through small-group interactions. The recapitulated questionnaire results were further discussed in the FGD forum when designing the QFD. The FGDs were conducted at four campuses selected using voluntary sampling.

4. Expert Judgement

The results of the FGD were then confirmed with experts. Expert evaluations in this research involved individuals with a minimum of ten years of experience in the manufacturing field. The expert assessments were conducted through interviews and consultation sessions.

Population and Research Sample

$$n = \frac{256}{1 + 256\ (0{,}1)^2} \quad (1)$$

$$n = \frac{256}{2{,}57}$$

$$n = 99{,}61\ = 100 \text{ Sample}$$

Explanation:
n = Required sample size
N = Total population size
e = Margin of error or acceptable error rate (typically between 0.05 and 0.1)

Data Analysis Methods

The data analysis in this research integrates the gap analysis method from ServQual, IPA, and QFD to achieve more significant results. The gap analysis in ServQual measures the discrepancy between perceived and expected performance. Perception refers to the interpretation of the services provided. The gap is calculated by comparing the values of actual service quality and expected service quality. ServQual evaluation can be conducted using various methods, including models developed for this purpose [19]. Steps in Data Analysis for this Model:

1. Assign scores to each attribute associated with the relevant dimensions by combining ordinal and interval or ratio scales.
2. Compute the average score for each attribute within the dimensions, then calculate the overall average for each ServQual dimension.
3. Calculating the Gap (Equation 2) determines the gap ($\boldsymbol{Q}$) by comparing actual scores (stakeholders' assessment of the current quality of sales services) and expected scores (their desired level of quality for sales services).

   $\boldsymbol{Q} = \boldsymbol{P} - \boldsymbol{E}$ (2)

   Where:
   Q = Quality of Service
   P = Perception (actual performance)
   E = Expectation (desired performance)

Figure 2. Flow Research

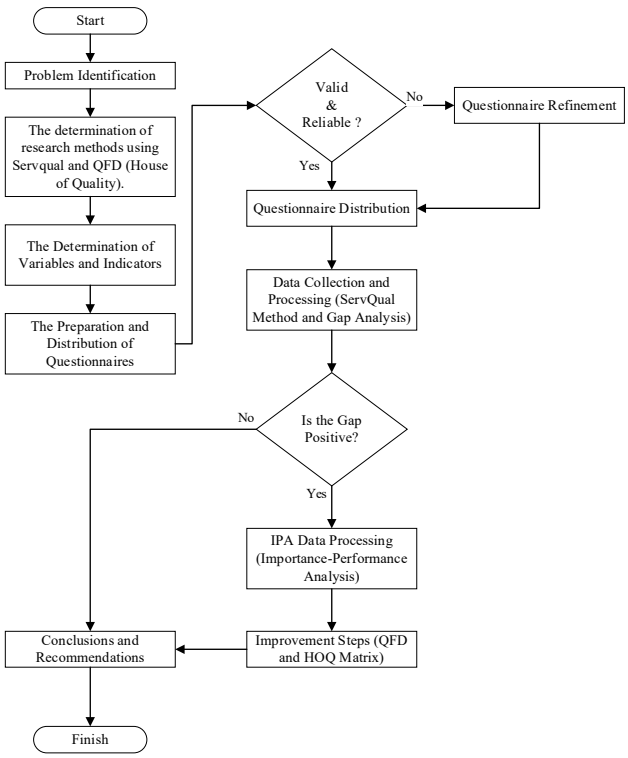
4. Evaluate the gaps to identify areas that require improvement and additional attention.
5. Importance-Performance Analysis (IPA)

IPA (Importance-Performance Analysis) is a tool for analyzing and evaluating the significance of various attributes or factors influencing customer satisfaction, along with the perceived performance of these attributes [20]. Using online reviews as data, IPA helps identify areas that need improvement and those already performing well based on customer perceptions [9]. Steps in Data Analysis for the IPA Model:

a. Gather reviews or data from customers regarding sales quality.
b. Determine the attributes that are important to customers in the sales process.
c. Evaluate each attribute's level of importance and performance from the customer's perspective.
d. Create an IPA matrix to plot attributes based on their importance and performance.
e. Identify differences between importance and performance to pinpoint areas that require improvement.
f. Determine which areas should be prioritized for improvement based on the analysis results.

6. Quality Function Deployment (QFD):

QFD is used to link user needs with design and building performance. The goal is to ensure that the building design meets user expectations by prioritizing key features to enhance overall quality



and performance [21]. QFD (Quality Function Deployment) Involves the Following Steps:

a. Identify the needs and expectations of stakeholders related to sales service improvement.
b. Gather data on stakeholder expectations through Focus Group Discussions (FGD).
c. Create a QFD team composed of various disciplines involving stakeholders who play a role in improving sales services.
d. Establish stakeholders' specific needs and expectations regarding the quality of sales services.
e. Construct a QFD matrix to link stakeholder needs with the actions or features that must be implemented.
f. Identify concrete steps and apply improvements in sales services that align with stakeholder needs and the company's objectives.

Research Steps

Research steps are a series of procedures and stages designed to achieve research objectives in a structured and systematic manner, ensuring that the research process is conducted effectively and efficiently. This can be illustrated in Figure 2.

Results and Discussions

Questionnaire Design

To assess and improve the quality of sales services in a manufacturing company, the questionnaire design must consider factors affecting customer satisfaction, such as product quality, customer service, and sales processes. This questionnaire aims to collect relevant data to evaluate the quality of sales services based on these factors. The target respondents may include customers, sales staff, and company management.

Validity and Reliability Testing

Validity and reliability testing is conducted to ensure the reliability of the collected data, followed by an analysis stage using the integrated SERVQUAL and IPA methods to determine each variable's weights and importance levels. Validity and reliability are tested separately for the expectation and perception variables of SERVQUAL with the assistance of Minitab software. The validity testing results for expectation and perception variables are presented in Table, while the reliability testing results can be found in Table 1.

The validity testing results for the expectation and perception variables, conducted using Minitab software on 180 SERVQUAL indicators, show that all indicators are valid, as presented in Table 2. Meanwhile, Table presents the reliability testing results, which yielded a Cronbach's alpha value of 0.917 for the expectation variable and 0.938 for the perception variable. These results indicate that the collected data can be used for the next process, namely calculating the critical index.

Table 1. Reliability Test

Variable	Pearson Correlation	Keputusan
1. A	0.478	Valid
2. A	0.634	Valid
3. A	0.671	Valid
4. A	0.692	Valid
5. B	0.787	Valid
6. B	0.760	Valid
7. C	0.691	Valid
8. C	0.505	Valid
9. C	0.526	Valid
10. C	0.633	Valid
11.D	0.734	Valid
12.D	0.730	Valid
13. E	0.852	Valid
14. E	0.862	Valid
15. F	0.580	Valid
16. F	0.854	Valid
17. G	0.670	Valid
18. G	0.601	Valid
19. G	0.604	Valid

Table 2. Validity Test

Variable	Cronbach's Alpha	Keputusan
A	0,7422	Be accepted
B	0,8065	Good
C	0,7	Be accepted
D	0,7585	Be accepted
E	0,8891	Good
F	0,7508	Be accepted
G	0,7314	Good

After conducting validity and reliability tests, the next step was distributing questionnaires to four countries involving 256 customers. Of these, 103 respondents completed the survey, with their profiles summarized in Table 2. Based on that Table, the respondents' distribution across countries (Figure 3) is as follows: Belgium (35%), Luxembourg (33%), Indonesia (22%), and Thailand (10%). Regarding tenure (Figure 4), the variation is as follows: under 5 years (36 respondents, 35%), 5–10 years (34 respondents, 33%), 10–15 years (23 respondents, 22%), and over 15 years (10 respondents, 10%).

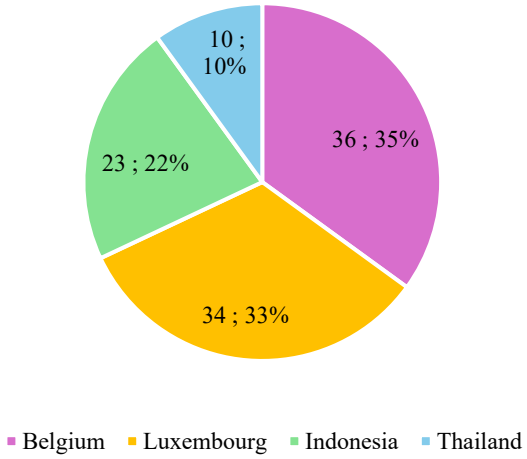


Figure 5. The Respondents' Distribution Across Countries

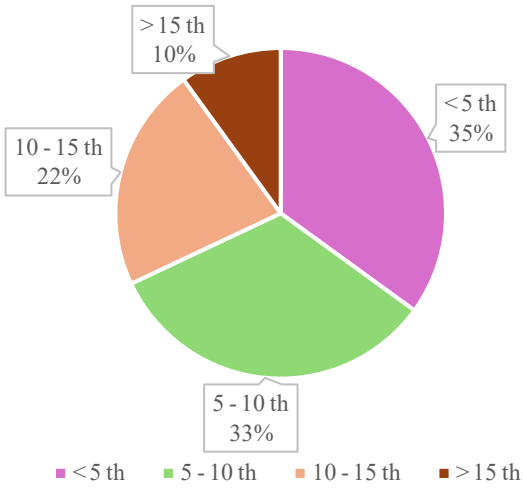


Figure 3. The Respondents' Distribution Regarding Tenure

Criticality Index Calculation

To assess the level of criticality, an evaluation is first conducted on the gap between the industry's expectations of service quality and the perceptions currently experienced. This gap is calculated by subtracting the average performance score from the average importance score obtained from the questionnaire.

Table 3 shows nineteen gap indicators between Perception and Expectation, derived from six SERVQUAL variables. The results show negative gaps ranging from -2.0777 to 0.0485, indicating areas that require improvement. The gaps of -2.0097, -2.0777, -1.5825, and -1.5243 are observed in item 1. A, 11.D, 16. F, and 17. G, respectively.

Table 3. Gap Indicators Between Perception and Expectation

Questionnaire Responses	Perception	Harapan	GAP
1. A	2,544	4,553	-2,0097
2. A	3,466	4,612	-1,1456
3. A	3,388	4,524	-1,1359
4. A	4,107	4,592	-0,4854
5. B	2,456	4,495	-2,0388
6. B	2,534	4,485	-1,9515
7. C	2,864	4,476	-1,6117
8. C	4,524	4,476	0,0485
9. C	2,505	4,515	-2,0097
10. C	4,515	4,485	0,0291
11.D	2,485	4,563	-2,0777
12.D	4,427	4,515	-0,0874
13. E	4,534	4,515	0,0194
14. E	3,485	4,476	-0,9903
15. F	2,524	4,515	-1,9903
16. F	2,961	4,544	-1,5825
17. G	3,029	4,553	-1,5243
18. G	3,515	4,476	-0,9612
19. G	3,447	4,544	-1,0971

Preliminary Analysis Using Importance-

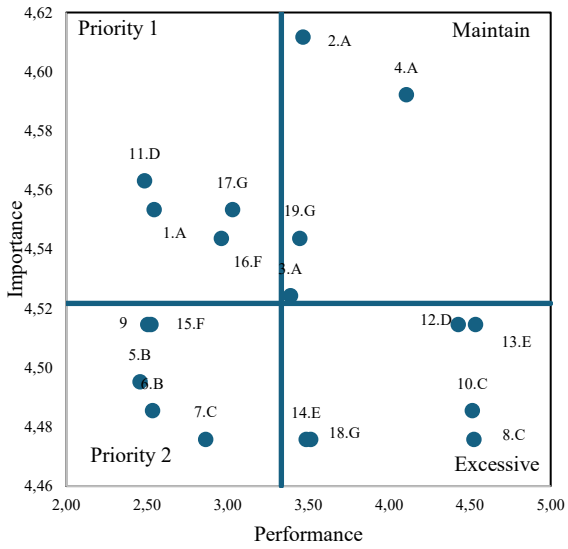


Figure 4. The IPA Framework

Performance Analysis (IPA)

Before proceeding to QFD, the Importance-Performance Analysis (IPA) method is utilized to identify influential factors based on the results derived from the SERVQUAL dimensions. A satisfaction and importance table is prepared to construct a Cartesian diagram that positions the data based on the IPA framework. Through this method, priority areas for improvement can be identified (Figure 5). The diagram reveals four attributes

located in Quadrant A. Details of these attributes are as follows:

1. **1. A**: Alignment of production or regrinding outcomes (quality is still lacking).
2. **11.D**: The BKS site needs more professionalism.
3. **16. F**: Prices are less competitive compared to competitors.
4. **17. G**: Service quality is unsatisfactory (delivery).

Table 4. Improvement Areas

Code	Customer Requirement
1. A	Conformity of production results or regrinding (quality still needs to be improved).
11.D	The BKS site is unprofessional.
16. F	Prices are less competitive than competitors.
17. G	Service quality could be more satisfactory (delivery).

The next step after conducting the IPA analysis involves developing the QFD design using the House of Quality (HoQ). Table 3 and Figure 5 present the mapping results of the HoQ matrix, where the relationship between Customer Requirements and Technical Descriptions is scored as 1, 3, or 9, representing weak, moderate, and strong relationships, respectively.

Based on the analysis in Table 4, four improvement areas were identified: inadequate production results or regrinding quality, lack of professionalism at the BKS site, less competitive pricing compared to competitors, and unsatisfactory service quality (delivery). These customer needs correspond to four technical descriptors (Figure 6): QC training, IT personnel recruitment, recalculating production costs (HPP), and optimizing production processes.

Presenting the percentage results in descending order Figure 6: QC training with a score of 6 (13.64%), IT personnel recruitment with a score of 9 (20.45%), recalculating production costs (HPP) with a score of 10 (22.73%), and production process optimization with a score of 19 (43.18%).

The study by [5] utilized 20 attributes with 67 respondents. The results of their research identified five priorities through Importance-Performance Analysis (IPA) and generated ten findings in Quality Function Deployment (QFD).

The study by [14] involved 72 respondents and used 14 attributes. This research identified five priorities through IPA based on their analysis.

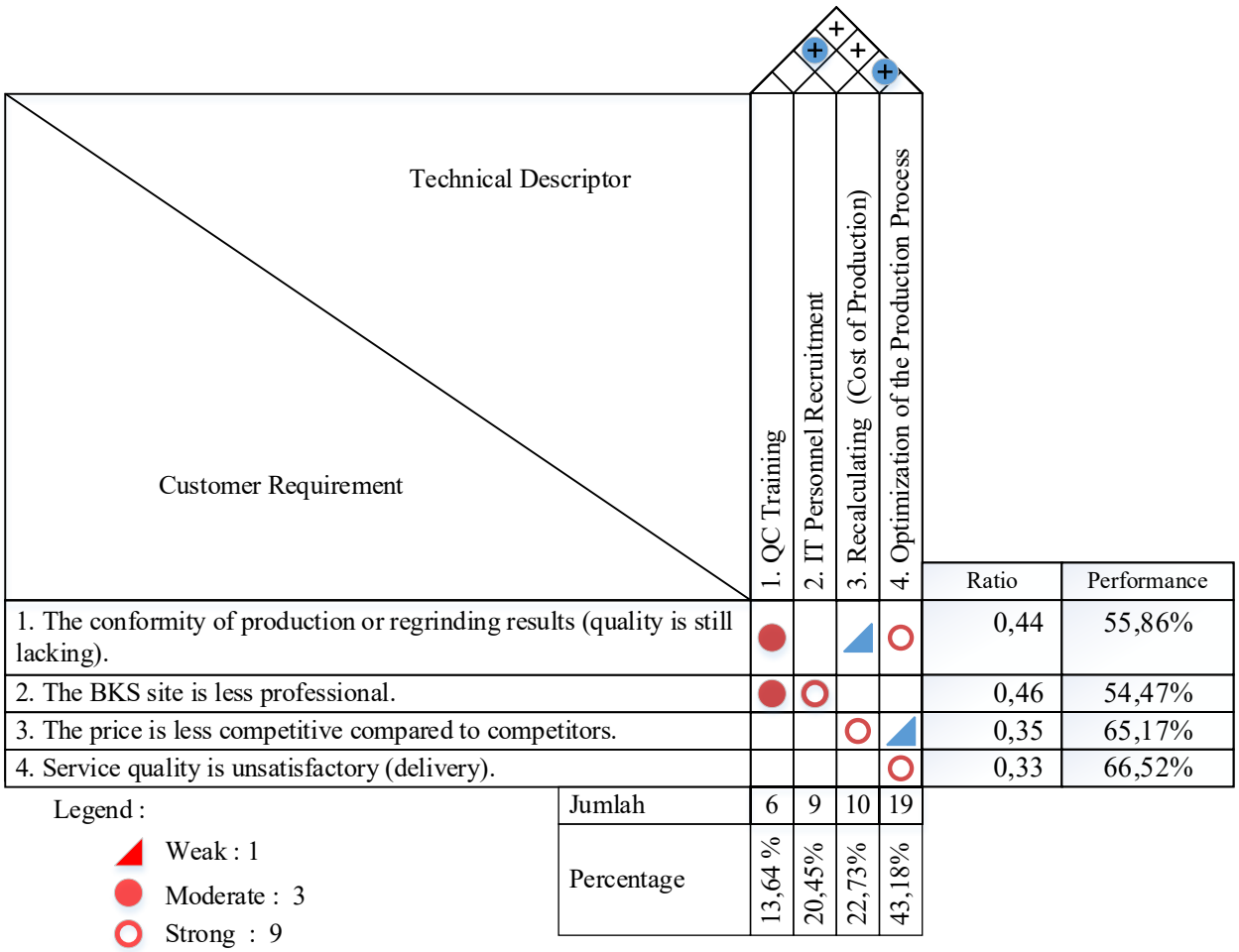


Figure 6. Quality Function Deployment

In my study, which involved 103 respondents and 19 indicators, the analysis resulted in 4 main IPA priorities and identified four areas of QFD findings. Compared to previous studies, this research encompasses a broader range of respondents and a more specific number of indicators, providing a deeper focus on the main priorities identified through IPA analysis and QFD findings.

Conclusions

The results of this study lead to several conclusions, including: (1) the analysis of the nineteen indicators of the gap between Perception and Expectation shows a negative range from -2.0777 to 0.0485, indicating the need for improvements; (2) the importance-performance analysis (IPA) reveals four indicators as key priorities for enhancement; (3) the quality function deployment (QFD) analysis, processed into a house of quality (how) matrix, identifies four key areas that need improvement, namely: qc training with a score of 6 (13.64%), it personnel recruitment with a score of 9 (20.45%), recalculating production costs (HPP) with a score of 10 (22.73%), and production process optimization with a score of 19 (43.18%).

This study identifies several limitations in its implementation process. The analysis using serval, ipa, and QFD methods requires further investigation to achieve optimal results. The scope of the study is limited to the rotary cutter USG 600 product, and it only uses data from pt.bks Indonesia for the period from July to June 2024. As a practical implication, this study guides the company in prioritizing improvements in service quality and production processes. The findings are expected to serve as a reference for enhancing the company's competitiveness in the market. Future research should cover a broader product range and a longer time period and incorporate additional analytical methods to gain more comprehensive insights.

Author Contributions

A short paragraph specifying their individual contributions must be provided for research articles with several authors. The following statements should be used: "Conceptualization, Ades Yulia Apriani. and Saiful Hendra; methodology, Hasbullah; software, Mirandhi Pratiwi; validation, Singgih Juniawan, Mirandhi Pratiwi and Daruki; formal analysis, Hasbullah; investigation, Ades Yulia Apriani; resources, Singgih Juniawan; data curation, Mirandhi Pratiwi; writing—original draft preparation, Ades Yulia Apriani; writing—review and editing, Singgih Juniawan; visualization, Ades Yulia Apriani; supervision, Saiful Hendra; project administration, Ades Yulia Apriani; funding acquisition, Ades Yulia Apriani. All authors have read and agreed to the published version of the manuscript." Please turn to the CRediT taxonomy for the term explanation. Authorship must be limited to those who have contributed substantially to the work reported.

Conflicts of Interest

Declare conflicts of interest or state, "The authors declare no conflict of interest." Authors must identify and declare any personal circumstances or interests that may be perceived as inappropriately influencing the representation or interpretation of reported research results. Any role of the funders in the design of the study; in the collection, analyses or interpretation of data; in the writing of the manuscript; or in the decision to publish the results must be declared in this section. If there is no role, please state "The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results".

References

[1] S. Altuntas and S. Kansu, "An innovative and integrated approach based on SERVQUAL, QFD and FMEA for service quality improvement: A case study," *Kybernetes*, vol. 49, no. 10, pp. 2419–2453, 2020, doi: 10.1108/K-04-2019-0269.

[2] E. Isaenkova, "Identification of directions for improving the quality of medical services using SERVQUAL and IPA techniques.," *Manager Zdravoochranenia*, 2022, doi: https://doi.org/10.21045/1811-0185-2022-9-25-32.

[3] M. Chusaeni, B. Syairuddin, and K. Gunarta, "Analysis of Improving The Service Quality of Professional Cooperation in 'XZY' Higher Education Based on Servqual, IPA and QFD," 2020.

[4] D. Caesaron, J. Makapedua, and R. P. Lukodono, "Evaluation of Online-Based Ride-Hailing Services Using Service Quality (Servqual) Method, Refined Kano Model, Importance Performance Analysis (IPA), and Quality Function Deployment (QFD): A Case Study of Grab Bike Indonesia," *ComTech: Computer, Mathematics and Engineering Applications*, vol. 12, no. 2, pp. 75–88, 2021, doi: 10.21512/comtech.v12i2.6790.

[5] H. Indrawidjajanto and B. Syairudin, "Analysis on Quality of Service at Design and

Engineering Department by Using Servqual, IPA, and QFD Methods," *IPTEK Journal of Proceedings Series*, vol. 0, no. 1, p. 328, 2021, doi: 10.12962/j23546026.y2020i1.11337.

[6] T. Abdulkerim, I., Avvari, M., & Cherkos, "Design of house of quality using SERVQUAL and QFD for service quality improvement: a case of Bahir Dar city hotels.," *International Journal of Applied Management Science.*, 2019, doi: https://doi.org/10.1504/IJAMS.2019.10022347.

[7] A. Jonkisz, P. Karniej, and D. Krasowska, "The Servqual Method as an Assessment Tool of the Quality of Medical Services in Selected Asian Countries," Jul. 01, 2022, *MDPI*. doi: 10.3390/ijerph19137831.

[8] M. Pakurár, H. Haddad, J. Nagy, J. Popp, and J. Oláh, "The service quality dimensions that affect customer satisfaction in the Jordanian banking sector," *Sustainability (Switzerland)*, vol. 11, no. 4, Feb. 2019, doi: 10.3390/su11041113.

[9] E. Azzopardi and R. Nash, "A critical evaluation of importance-performance analysis," *Tour Manag*, vol. 35, pp. 222–233, 2013, doi: 10.1016/j.tourman.2012.07.007.

[10] A. Das and T. Basu, "Assessment of peri-urban wetland ecological degradation through importance-performance analysis (IPA): A study on Chatra Wetland, India," *Ecol Indic*, vol. 114, Jul. 2020, doi: 10.1016/j.ecolind.2020.106274.

[11] E. Haktanır and C. Kahraman, "A novel interval-valued Pythagorean fuzzy QFD method and its application to solar photovoltaic technology development," *Comput Ind Eng*, vol. 132, pp. 361–372, Jun. 2019, doi: 10.1016/j.cie.2019.04.022.

[12] A. Jonkisz, P. Karniej, and D. Krasowska, "The Servqual Method as an Assessment Tool of the Quality of Medical Services in Selected Asian Countries," *Int J Environ Res Public Health*, vol. 19, no. 13, Jul. 2022, doi: 10.3390/ijerph19137831.

[13] Nazaruddin, "IMPLEMENTATION OF QUALITY IMPROVEMENTS TO MINIMIZE CRITICAL TO QUALITY VARIATIONS IN POLYURETHANE LIQUID INJECTION PROCESSES."

[14] E. Haktanır and C. Kahraman, "A novel interval-valued Pythagorean fuzzy QFD method and its application to solar photovoltaic technology development," *Comput Ind Eng*, vol. 132, pp. 361–372, Jun. 2019, doi: 10.1016/j.cie.2019.04.022.

[15] A. Das and T. Basu, "Assessment of peri-urban wetland ecological degradation through importance-performance analysis (IPA): A study on Chatra Wetland, India," *Ecol Indic*, vol. 114, Jul. 2020, doi: 10.1016/j.ecolind.2020.106274.

[16] M. Pakurár, H. Haddad, J. Nagy, J. Popp, and J. Oláh, "The service quality dimensions that affect customer satisfaction in the Jordanian banking sector," *Sustainability (Switzerland)*, vol. 11, no. 4, Feb. 2019, doi: 10.3390/su11041113.

[17] Nazaruddin, "Implementation Of Quality Improvements To Minimize Critical To Quality Variations In Polyurethane Liquid Injection Processes," *Journal of Applied Engineering and Technological Science*, vol. 3, no. 2, pp. 139–148, Jun. 2022, doi: 10.37385/jaets.v3i2.771.

[18] L. SÜRÜCÜ and A. MASLAKÇI, "VALIDITY AND RELIABILITY IN QUANTITATIVE RESEARCH," *Business & Management Studies: An International Journal*, vol. 8, no. 3, pp. 2694–2726, Sep. 2020, doi: 10.15295/bmij.v8i3.1540.

[19] I. Dikmen, M. Talat Birgonul, and S. Kiziltas, "Strategic use of quality function deployment (QFD) in the construction industry," *Build Environ*, vol. 40, no. 2, pp. 245–255, 2005, doi: 10.1016/j.buildenv.2004.07.001.

[20] E. Azzopardi and R. Nash, "A critical evaluation of importance-performance analysis," *Tour Manag*, vol. 35, pp. 222–233, 2013, doi: 10.1016/j.tourman.2012.07.007.

[21] N. Fajri, N. K. Busri, and R. Riskawati, "The Customer Satisfaction Measurement Using SERVQUAL Method: Case Study in Printing Company," *Jurnal Manajemen*, vol. 14, no. 1, p. 46, 2023, doi: 10.32832/jm-uika.v14i1.9412.